Proposal Reviews

#211: Vernal pool communities, hydrology, and conservation

University of California, Davis

Initial Selection Panel Review	
Research and Restoration Technical Panel Review	
Bay Regional Review	
Delta Regional Review	
San Joaquin Regional Review	
Sacramento Regional Review	
External Scientific Review	#1 #2 #3 #4
Environmental Compliance	
Budget	

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Initial Selection Panel Review

Proposal Number: 211

Applicant Organization: University of California, Davis

Proposal Title: Vernal pool communities, hydrology, and conservation

Please provide an overall evaluation rating.

Explanation of Recommendation Categories: Fund

- **As Is** (a proposal recommended for funding as proposed)
- **In Part** (a proposal for which partial funding is recommended for selected project phases or components)
- **With Conditions** (a proposal for which funds are recommended if the applicant contractually agrees to meet the specified conditions)

Consider as Directed Action in Annual Workplan (a proposal addressing a high priority action that requires some revision followed by additional review prior to being recommended for funding)
Not Recommended (a proposal not currently recommended for funding-after revision may be considered in the future)

Note on "Amount":

For proposals recommended as Fund As Is, Fund In Part or Fund With Conditions, the dollar amount is the amount recommended by the Selection Panel.

For proposals recommended as Consider as Directed Action in Annual Workplan, the dollar amount is the amount requested by the applicant(s).

Fund	
As Is	**-**
In Part	**-**
With Conditions	**-**
Consider as Directed Action	**-**
Not Recommended	**X**

Amount: **$0**

Conditions, if any, of approval (if there are no conditions, please put "None"):

none

Provide a brief explanation of your rating:

The proposal has several technical limitations that detract from the overall technical quality. The proposal lacked detail in several key areas such as linkages among the physical/chemical measurements and the floristic component, poor description of analytical methods and the lack of a clear conceptual model. The value of the floristic classification to CALFED goals was also questioned by one reviewer. In spite of the relatively high rating by the technical panel, the technical drawbacks and weaknesses in the description of the project warrant improvement and clarification. Although at risk animal species are relatively few in vernal pools, the lack of attention to those species, coupled with reviewers doubts about the need for another classification system for vernal pools and the absence of a modeling component weakens the justification for funding at this time. The panel also felt that the applicant needs to carefully outline how this research effort is new and innovative compared to previous vernal pool studies.

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Research and Restoration Technical Panel Review Form

Proposal Number: 211

Applicant Organization: University of California, Davis

Proposal Title: Vernal pool communities, hydrology, and conservation

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;
Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;
Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;
Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Superior	**The research would add to the baseline knowledge of vernal pool communities, which is of considerable importance because they are greatly threatened by human activities. The lack of attention to animal assemblages is of concern as is the absence of a conceptual model linking biological and physical/chemical components. The development of the floristic classification of the proposal is more fully described than the hydrologic component and would produce a valuable product; the panel considered the classification more worthy of funding than the hydrologic component. The lack of detail in describing how the hydrologic data being collected would be analyzed and related to the vegetation classification resulted in the panels lower ranking of that component of the proposal.**
XAbove average	
-Adequate	
-Not recommended	

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

   The project has two goals: development of a floristically based classification scheme for vernal pools and determining if pools are hydrologically isolated. No conceptual model linking the floristic analysis and physical/chemical regime was provided, and the proposal would have been stronger if the two components of the study were more clearly linked. The absence of a modeling perspective for the hydrologic component was particularly troubling. Clear statements of how these studies would be used in conservation were not provided. The study would be stronger if sampling included vernal pool animals, which are species at risk.

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

   The major strength of the study is the capabilities of the individuals involved in developing the floristic classification. The proposed work is feasible. Performance measures for the hydrologic component are not presented.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

   The project would clearly increase knowledge of vernal pool communities in the area. This would be a significant contribution. Developing increased understanding of the hydrology of these systems is also a worthwhile endeavor, and could help in the development of a conceptual model, which is lacking from this proposal.

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The budget is reasonable. The study is an extention of an existing study funded by another source; this greatly increases the benefit/cost ratio of the proposed work.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

   This proposal was rated medium by three regions and low by one. Concerns raised include lack of connection with local groups, likely difficulty getting permits for hydrology component, and questions of the need for yet another classification, particularly one that did not deal with animals, many of which are at-risk species. A more inclusive approach that at least included animals would be much more useful. One region argued that the classification was not needed because areas or species for protection had already been identified.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

   No prior performance to review, and no problems with environmental compliance. Budget OK except $1 (!) off total funds vs. sum of annual costs.

Miscellaneous comments:

None

Bay Regional Review:

Proposal Number: 211

Applicant Organization: University of California, Davis

Proposal Title: Vernal pool communities, hydrology, and conservation

Overall Ranking: **-**Low **X**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

Most CALFED actions regarding vernal pools (e.g., NCCP milestones) identify certain areas (or vernal pool species) for protection, so classification isn't immediately needed. The medium ranking reflects the fact that project, which is sound and would provide excellent information, could be funded at a later date, from the Bay Region's standpoint.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   The applicants have experience in this sampling and classification methodology from their current work on vernal pools in southern and coastal California. No permits or environmental documentation will be required for work, and only sites for which access has been granted will be visited (landowner contacts have been initiated with TNC and other landowners who have agreed to allow access, although no written permission letters are included in the proposal). The applicants apparently had good success obtaining access for the southern and coastal California vernal pool study. Work on the hydrology studies has already commenced at four locations, with landowner permission. The timeline seems reasonable. The team is well qualified to do the work.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   XYes **-**No

   How?

   Multi-Region Priority 6, ensure recovery of at-risk species by developing conceptual understanding and models of processes that cross regions: several MSCS/CALFED species are vernal pool species and would benefit from understanding of hydrologic processes gained from this proposed work. However, protection of vernal pool areas per CALFED goals, and their contributing watersheds, is the first required step; this project can be funded later and still meet CALFED goals. (Other regional panels may disagree.) Bay Region Priority 2, to acquire protect and restore vernal pool habitats north and east of Suisun: the proposed hydrologic and classification work in Jepson Prairie would help prioritization of acquisition/protection in this region. This argues for immediate funding, but the panel believes sufficient information exists to prioritize protection in this area. Other Regional priorities are discussed in the proposal.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   XYes **-**No

   How?

   The applicants will compare their results to (or incorporate) existing data sets, and will crosswalk their classification to MCV (the states standard classification scheme) and work by Fiedler et al (USEPA vernal pool classification).

4. Does the project adequately involve local people and institutions?

   XYes **-**No

   How?

   The applicants will give formal presentations at conferences, publish articles on various aspects of the study, and will seek other outreach opportunities, such as television and coordination with conservation organizations and agricultural groups.

Other Comments:

None.

Delta Regional Review:

Proposal Number: 211

Proposal Title: Vernal pool communities, hydrology, and conservation

Overall Ranking: **-**Low **X**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

This research could improve our understanding of vernal pools.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   have permitted researchers

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   XYes **-**No

   How?

   imrpoves knowledge of at-risk habitats and species (MR-6)

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   XYes **-**No

   How?

   working on some conservation areas

4. Does the project adequately involve local people and institutions?

   XYes **-**No

   How?

   will engage local agencies and interests

Other Comments:

augmentation of existing research being funded by the Packard Foundation, cost more than anticipated

San Joaquin Regional Review:

Proposal Number: 211

Applicant Organization: University of California, Davis

Proposal Title: Vernal pool communities, hydrology, and conservation

Overall Ranking: **X**Low **-**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

No convincing argument as to why another classification system for vernal pools is needed. Floristic only; does not include vernal pool animals which are also highly at risk. A comprehensive classification system might be more desirable.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   Research team well qualified, assmebled, and in place. Very experienced. All access issues resolved. Wetness/dryness main constraint but there is no control of that factor.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   XYes **-**No

   How?

   MR 6 - Looks at vernal pools to help determine what may be most at risk. No strong tie as written. SJ 4 - Link to at risk species - determining what is at risk.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   XYes **-**No

   How?

   Follows up and adds to a 2 year study from Packard Foundation and Caltrans. Information will be useful in restoration projects for measuring management strategies.

4. Does the project adequately involve local people and institutions?

   XYes **-**No

How?

To the degree needed in gaining access to private lands. Plans to disseminate the results.

Other Comments:

Not a strong direct tie to currently listed species. May help in long run. Floristically based. Many listed species are animals. As they are not collecting animal information, important links may be missed. Would be better if the associations were also tied to the listed shrimp. Could be a confounding factor.

Sacramento Regional Review:

Proposal Number: 211

Applicant Organization: University of California, Davis

Proposal Title: Vernal pool communities, hydrology, and conservation

Overall Ranking: **-**Low **X**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

The panel ranked this as medium since it could be important work but there was concern over getting permits and connecting with local groups.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   Our yes is qualified. The vernal pool floristic classification component of this study is feasible as it is ongoing, staff have been hired and trained, access to field sites has been obtained, and field methods have been developed and refined. However, the hydrology component of this research is not feasible under the time frame proposed because the researchers did not allow adequate time to identify study areas, obtain permission to use these areas, or obtain federal permits to conduct the study.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   -Yes **X**No

   How?

   Our no is qualified. The study would develop a classification system for vernal pools which might inform conservation strategies for these species, however it does not directly address restoration priorities described in the PSP.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   -Yes **X**No

   How?

   The project is not linked with any other restoration efforts in the region.

4. Does the project adequately involve local people and institutions?

-Yes **X**No

How?

This project does not involve local people or institutions.

Other Comments:

This project does not directly address the needs of at-risk species. Many panel members suggested these types of studies should be better coordinated with local watershed planning groups.

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **211**

Applicant Organization: **University of California, Davis**

Proposal Title: **Vernal pool communities, hydrology, and conservation**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

I am a researcher at UCD (in another department) and have taken a graduate level course from Dr. Barbour.

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
XExcellent	**Dr. Barbour proposes to conduct Calfed priority research on vernal pools, using appropriate methods of vegetation analysis and hydrological assessment, and has assembled a top notch research team.**
-Good	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goals of the proposed research are to floristically classify all vernal pool types in California and to investigate vernal pool hydrology. These goals are articulated clearly, and relate to each other in the hoped for outcome that vernal pool florisitc composition will be an indicator of hydrology. Calfed has identified vernal pools as requiring more study which the proposed research will address.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

This is appropriately a research project. The study is justified due to its approach to classify vernal pools; i.e. releves. Due to a wide variety of difficult-to-identify plant species, classification of vernal pool communities has not yet been accomplished. Relating clusters of floristically similar pools to environmental variation will allow possible abiotic constraints to be discerned, and florisitc composition may, in turn, be used to predict pool hydrology.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   Previous classifications, which have been based on dominant species, have failed to provide a standard, biologically meaningful classification scheme. The power of the releve approach lies it its use in hierarchical classification of vegetation. Coupling these hierarchies with hierarchical environmental variables in ordination analyses will reveal significant associations between both the environment and the plant community. This information can then be used in restoration and to aid management of vernal pool complexes.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   This project has a high likelihood of success. The approach is fully documented and is well known and used by international plant ecologists. And, in fact, the research team has had a full year of experience (through another grant) to perfect their techniques and work protocols.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   Specific examples of performance measure used during the last season were listed.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   Expected products are at least 4 substantial peer-reviewed publications. Implications for management will be presented.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   Dr. Barbour has assembled the "dream team" of vernal pool experts, and will have the advise of foreign plant ecologists to certify the correctness of their releves. UC Davis will supply support for the research.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   yes, the costs seem quite reasonable for the expected results.

Miscellaneous comments:

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **211**

Applicant Organization: **University of California, Davis**

Proposal Title: **Vernal pool communities, hydrology, and conservation**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**The "hydrology component" of the proposed work deserves consideration for funding.**
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The PI is correct characterizing the current state of understanding of vernal pool "hydrology" as limited. Assessing (via field data) the hydrologic response (both physical and chemical) of a series (4 sites) of vernal pools in the Central Valley would be an important contribution. The proposed study is timely.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   A "rigorous" conceptual model of vernal pool dynamics (physical and chemical) is not presented. The study would provide information that is very likely to help in the development of a conceptual model.

In my opinion the proposed project (i.e., the hydrology component) is justified.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The approach is acceptable. The data wwould be useful (perhaps to decision-makers) for understanding (based upon data) how vernal pools work.

   The PI does not discuss how the proposed study could be of value in process-based, concept-development simulations (i.e., Would the data be collected with potential modeling in mind?).

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The insturmentation (realated to the hydrology component) of the proposed study is not difficult to install, read, or maintain (e.g., piezometers and tensiometers). The likeihood of sucess is very good. The scale aspects of the project are unclear.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   It is unclear how performance (related to the hydrology component) will be assessed in the proposed study.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The major products of the proposed study would be peer review articles (in excellent journals) and presentations at both professional and public meetings.

   Information from the proposed study may provide guidance for the future management of vernal pools.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   Professor Barbour is more that qualified to conduct the proposed research. I see no reason why Professor Barbour, and his team, could not accomplish the objectives of the proposed project.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The budget, which supports students, is reasonable.

Miscellaneous comments:

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **211**

Applicant Organization: **University of California, Davis**

Proposal Title: **Vernal pool communities, hydrology, and conservation**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**The proposal has two objectives: (1) development of a vernal pool classification scheme based on floristics. This is thoroughly explained and feasible. What is less clear is how this will be used for making conservation decisions and how it will be related physical/chemical information and existing classification methods. (2) Determining if vernal pools are hydrologically isolated or regionally interconnected. This was the weakest part of the proposal. There was no discussion of how the data being collected would be integrated (e.e. what models would be used) to test the hypotheses. No sampling was proposed in human-impacted ares to test ideas of hydrologic alterations that occur with development or agriculture. It is important to test this hypothesis, since it alters how these systems should be managed for conservation purposes, but it is not clear that the proposed work will be an effective test of the hypothesis.**
XGood	
-Poor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   Objectives are clearly stated. Vernal pools appear to be at risk, so the ideas are timely and important.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   A conceptual model for vegetation is presented, and general ideas for hydrology are presented; but it is not clear how the hydrologic data will be used to test the hypothesis of regional connectivity.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The vegetation component is well designed and carefully explained, but the hydrology component is very vague. For example, there is no mention of what models will be used. There is also poor integration of the vegetation analyses with hydrologic analyses.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The vegetation analysis is feasible and is an extension of a currently funded project (funded by another source), although it appears that sampling took longer in the other project than they had originally thought. The hydrology appears to be a fishing expedition without clear explanation of how the hypotheses will be tested.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   There are no performance measures for the hydrologic modeling.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   It is difficult to know whether decision-makers will find products of value from this research. A floristically based classification scheme will be developed. How will this be used to identify areas needing conservation attention? Too little attention is given to relating this floristic classification scheme to the existing physically based classification scheme. This reviewer is not convinced that the floristically based scheme will necessarily provide a more useful product to aid in conservation decisions than will a physically based scheme. At the very least, results from the two methods need to be synthesized.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   Knowledge of the California flora is an important component of this project team.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   This project builds on work being done in a project funded by another source. Much of the budget is for field assistance, which is appropriate.

Miscellaneous comments:

External Scientific: #4

Research and Restoration External Scientific Review Form

Proposal Number: **211**

Applicant Organization: **University of California, Davis**

Proposal Title: **Vernal pool communities, hydrology, and conservation**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
XExcellent	**I have reviewed many proposals in my career, and few strike me with such interest as this one. It is important, it has many excellent individuals involved, it has a very efficient organizational structure, and a clear mission.** **I can find no aspect of it that requires improvement. While I acknowledge that much more should be done in the future, this proposal needs to be done first. Additional studies can and should use the information generated by this study as the foundation for continued research.**
-Good	
-Poor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   Goals are very clear and consistent. The concept is extremely timely and important. Having grown up in California, I know first-hand the hydrologic and ecologic significance of vernal pools. Subsequent studies that I have done in the Southwest (Arizona, New Mexico, and Utah) have reinforced my opinoion that such studies are vital to understanding regional recharge and ecologic systems.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   Yes, the study is clearly justified related to existing knowledge. The conceptual model is clearly stated, and provides a sound basis for the proposed work. Ample justificationis provided for the project. Hydrologic alteration of vernal pool communities will have substantial hydrologic and ecologic impact - something that this proposal clearly identifies and targets.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The approach is exceptionally well-designed and appropriate. The investigators have an excellent understanding of the problem and the studies needed to resolve the uncertainties. The project will provide an excellent baseline data set useful for managing the resources. My own experience makes me suspect that some managers may wish to interfere with (and perhaps stop) this study due to the clear threat it poses to current managament actions. Many local communities strive to remove these vernal wetlands to allow development, even though this adversely affects the long-term sustainability of their water resources.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The project is clearly feasible, and has a high likelihood of success. The scale of the project is consistent with the objectives.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   The performance measures are adequate. The inventory, as stated, will provide the baseline information needed for subsequent studies and management plans. I see no need for additional performance measures beyond those identified.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The products from the proposed characterization and inventory are of high value. They will lead to a) an improved scientific understanding of the resources, and b) a baseline inventory against which future studies can be compared.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The applicants are of exceptionally high caliber. The proposed project team is composed of a well-balanced diversity of capabilities, both from the physical as well as biological fields. I am impressed with the comprehensive nature of the capabilities of those involved in this project.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The budget is very reasonable. The scale of the project is large, yet the budget efficiently utilizes resources to cover the large scope. I have no concerns about the overall budget, nor do I have concerns about the relative allocation of resources within or between the budget categories. The benefits of the project are large for the cost proposed. These benefits will accrue over the long-term as improved management of the hydrologic and ecologic resource improves due to improved understanding of the vernal pools systems.

Miscellaneous comments:

I stongly urge the approval of this program. The vernal pools communities of the Western United States in general, and California in particular, are severely threatened. This is unfortunate because of their importance, both hydrologically as a source of ground-water recharge and water quality mediation, as well as ecologically as the nursery for many species.

Environmental Compliance:

Proposal Number: 211

Applicant Organization: University of California, Davis

Proposal Title: Vernal pool communities, hydrology, and conservation

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

   XYes **-**No

   If no, please explain:

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

   XYes **-**No

   If no, please explain:

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

   -Yes **X**No

   If yes, please explain:

Other Comments:

Budget:

Proposal Number: 211

Applicant Organization: University of California, Davis

Proposal Title: Vernal pool communities, hydrology, and conservation

1. Does the proposal include a detailed budget for each year of requested support?

   XYes **-**No

   If no, please explain:

2. Does the proposal include a detailed budget for each task identified?

   XYes **-**No

   If no, please explain:

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

   XYes **-**No

   If no, please explain:

4. Are appropriate project management costs clearly identified?

   XYes **-**No

   If no, please explain:

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

   -Yes **X**No

   If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

   $1.00 difference!

6. Does the budget justification adequately explain major expenses?

   XYes **-**No

If no, please explain:

7. Are there other budget issues that warrant consideration?

   -Yes **X**No

   If yes, please explain:

Other Comments: